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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Marc Theisen

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EXAMINER

FAN, HONGMIN

ART UNIT

PAPER NUMBER

2612

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/575,658	Applicant(s) THEISEN, MARC	
	Examiner HONGMIN FAN	Art Unit 2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 10-15 and 17-27 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 10-15, 17-27 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/12/2011</u> . | 6) <input type="checkbox"/> Other: ____. |

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DETAILED ACTION

Status of the Claims

Claims 10-15, 17-27 are currently pending.

Remarks

Applicant's argument to the objection of claim 24 is persuasive and objection to claim 24 has been withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10-13, 15, 19-21, 24, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foo et al (US 5702124) in view of Hakoyama et al (US 5515287), further in view of Imai (JP2001247001).

As to claim 10-11, referring to Fig. 1-6, Foo disclosed an apparatus for sensing a vehicle crash using a displacement velocity metric including an accelerometer 12 mounted at an appropriate location in the vehicle for sensing crash acceleration (col. 2, line 39-41). The accelerometer 12 is operatively coupled to a controller 16 through an anti-alias filter 18 (col. 2, line 46-48). The controller 16 gets the acceleration signal output from the filter 18 (col. 4, line 53-54). The crash acceleration signal 20 also is provided to a displacement determining function

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30. The displacement determining function 30 calculates a crash displacement value 32 by, preferably, double integrating the crash acceleration signal 20 (col. 2, line 67- col. 3, line 4).

Foo did not disclose determining the instant of contact (or crash). However, it is known in the art to determine the instant of contact. Hakoyama teaches a navigation display apparatus for collision avoidance utilizing polygonal safety regions and predicted danger areas wherein time required for own ship to move from the present (i.e. contact instant), position thereof to a possible collision point with the target ship can be calculated by solving the quadratic equation for t , the quadratic equation obtained by substituting equation (3) into equation (4), and the time t is expressed as follows (col. 7, line 22-27), see the quadratic equation 5 on col. 7. Therefore, it would have been obvious to one of ordinary skills in the art at the time of the claimed invention to incorporate determining the instant of contact as an alternative system in order to determine when to deploy safety devices.

Foo or Hakoyama did not disclose approximating a signal derived from an acceleration signal using a quadratic function. However, it is known in the art to do so. Referring to Fig. 8, Imai teaches collision type judging device wherein the time integration value of the deceleration with respect to time can be approximate by a quadratic curve (0009, line 2-3). Therefore, it would have been obvious to one of ordinary skills in the art at the time of the claimed invention to incorporate approximating the signal in the combined system of Foo and Hakoyama as an alternative method of calculating the instant of contact.

As to claim 12, referring to Fig. 1, Foo disclosed the crash velocity signal 26 is provided to a displacement threshold determining function 34. The displacement threshold determining

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function 34 provides a displacement threshold signal 36 having a value functionally related to the value of the crash velocity signal 26 (col. 3, line 16-20).

As to claim 13, the claim is interpreted and rejected as claim 10 (i.e. sensor 12 is mounted on the vehicle)

As to claim 15, still referring to Fig. 1, Foo disclosed two thresholds 34 and 68.

As to claim 19, referring to Fig. 4, Foo disclosed the profile of the displacement threshold value can either be stored as an equation relating threshold to velocity or as a look-up table having prestored values (i.e. plurality of thresholds, including 4 values) of displacement thresholds versus velocity (col. 4, line 42-46).

As to claim 20, the claim is interpreted and rejected as claim 19.

As to claim 21, the claim is interpreted and rejected as claim 15.

As to claim 24, the claim is interpreted and rejected as claim 19.

As to claim 27, the claim is interpreted and rejected as claim 11 and 17.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Foo et al (US 5702124) in view of Hakoyama et al (US 5515287), further in view of Imai (JP2001247001), further in view of Ugusa et al (US 20010043011).

As to claim 14, Foo did not disclose a surrounding-field signal. However, it is known in the art to incorporate surrounding-field signal. Referring to Fig. 1, Ugusa teaches a crash detection apparatus of vehicle comprising a left-front and right-front acceleration sensors 15 and 19 (i.e. providing surrounding-field signals). Therefore, it would have been obvious to one of

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ordinary skills in the art at the time of the claimed invention to incorporate a surrounding-field signal in Foo's apparatus in order to enhance its performance.

Claims 17-18, 22-23, 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foo et al (US 5702124) in view of Hakoyama et al (US 5515287), further in view of Imai (JP2001247001), further in view of Yamashita (US 6636794).

As to claim 17, Foo did not expressly disclose determining the instant of contact from a vertex of the quadratic function. However, it is known in the art to do so. Referring to Fig. 5A-5C, Yamashita teaches a vehicle passive safety system wherein the instant of contact is determined at the vertex (vertical dot-line) of integrated acceleration signal (i.e. quadratic function). Therefore, it would have been obvious to one of ordinary skills in the art at the time of the claimed invention to incorporate determining the instant of contact from a vertex of the quadratic function in Foo's apparatus since it is known method.

As to claim 18, still referring to Fig. 1, Foo disclosed the crash threshold determining function 68 is connected to the velocity value 26 and varies as a function of the crash velocity value 26 (col. 4, line 29-32). Foo did not disclose the function is linear. However, one of ordinary skills in the art clearly recognizes that higher the velocity, shorter time to impact (i.e. smaller threshold). Therefore, it would have been obvious to one of ordinary skills in the art at the time of the claimed invention to incorporate a linear function in determining the instant of contact.

As to claim 22, the claim is interpreted and rejected as claim 17 and 18.

As to claim 23, the claim is interpreted and rejected as claim 15.

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As to claim 25, all the claimed features have been address above, except Foo did not expressly disclose the approximation based on interpolation points on the twice integrated acceleration signal, wherein the interpolation points are determined by threshold values and by the times at which the approximating function assumes the threshold values. However, interpolation is well known method and in order to compare approximated value to the threshold values, the time of interpolation has to be the same with the threshold; otherwise, there would be no value to compare to the threshold.

As to claim 26, the claim is interpreted and rejected as claim 25.

Response to Arguments

Applicant's arguments with respect to claims 10-15, 17-26 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hongmin Fan whose telephone number is 571-272-2784. The examiner can normally be reached on Monday - Friday, 8:00 am - 4:30 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Mehmood can be reached on 571-272-2666. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HF

/Jennifer Mehmood/
Acting SPE of Art Unit 2612
September 8, 2011